



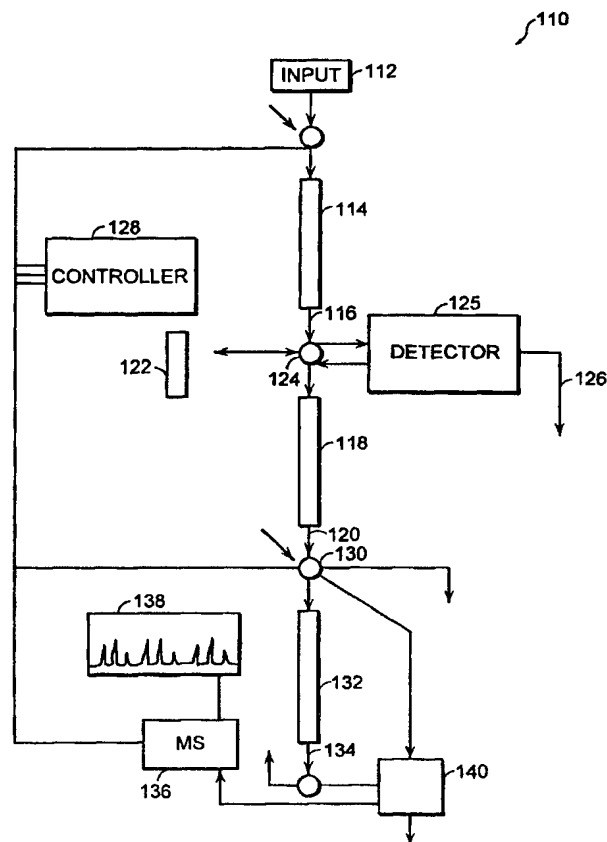
INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : G01N 30/88		A3	(11) International Publication Number: WO 97/01755
			(43) International Publication Date: 16 January 1997 (16.01.97)
(21) International Application Number: PCT/US96/10929 (22) International Filing Date: 26 June 1996 (26.06.96) (30) Priority Data: 60/000,518 26 June 1995 (26.06.95) US (71) Applicant: PERCEPTIVE BIOSYSTEMS, INC. [US/US]; 500 Old Connecticut Path, Framingham, MA 01701 (US). (72) Inventors: JINDAL, Satish; 20 Norman Street, Milton, MA 02186 (US). REGNIER, Fred, E.; 1219 Tuckahoe Lane, West Lafayette, IN 47906 (US). WILLIAMS, Kevin; 76 Beaconfield Road, Brookline, MA 02146 (US). AFEYAN, Noubar, B.; 6 Fairfield Drive, Lexington, MA 02173 (US). PALIWAL, Sandeep; Apartment 19, 1555 West Middlefield Road, Mountain View, CA 94043 (US). EVANS, David; 77 Malden Street, Natick, MA 01760 (US). PINGALI, Aruna; 1704 Windsor Ridge Drive, Westboro, MA 01581 (US). (74) Agent: TURANO, Thomas, A.; Testa, Hurwitz & Thibault, L.L.P., High Street Tower, 125 High Street, Boston, MA 02110 (US).		(81) Designated States: JP, European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). Published <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i> (88) Date of publication of the international search report: 6 March 1997 (06.03.97)	

(54) Title: HIGH SPEED, AUTOMATED, CONTINUOUS FLOW, MULTI-DIMENSIONAL MOLECULAR SELECTION AND ANALYSIS

(57) Abstract

The invention provides novel methods for screening a sample to select a ligand to a target of interest and for obtaining information about the ligand and its binding characteristics. Specifically, the claimed multi-dimensional methods involve combining a solution of heterogeneous ligands with the target of interest to screen the ligands on the basis of one or more binding characteristics. Ligands having the first binding characteristic bind to the target of interest thereby to form a target/ligand complex. The complex then optionally is separated from the unbound components using any of a variety of separation techniques, e.g., size exclusion. At least one of the complex or unbound components then is introduced to a second "dimension". The second dimension is capable of separating components based upon a second binding characteristic. One then elutes the ligand having the desired binding characteristics.



FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AM	Armenia	GB	United Kingdom	MW	Malawi
AT	Austria	GE	Georgia	MX	Mexico
AU	Australia	GN	Guinea	NE	Niger
BB	Barbados	GR	Greece	NL	Netherlands
BE	Belgium	HU	Hungary	NO	Norway
BF	Burkina Faso	IE	Ireland	NZ	New Zealand
BG	Bulgaria	IT	Italy	PL	Poland
BJ	Benin	JP	Japan	PT	Portugal
BR	Brazil	KE	Kenya	RO	Romania
BY	Belarus	KG	Kyrgyzstan	RU	Russian Federation
CA	Canada	KP	Democratic People's Republic of Korea	SD	Sudan
CF	Central African Republic	KR	Republic of Korea	SE	Sweden
CG	Congo	KZ	Kazakhstan	SG	Singapore
CH	Switzerland	LI	Liechtenstein	SI	Slovenia
CI	Côte d'Ivoire	LK	Sri Lanka	SK	Slovakia
CM	Cameroon	LR	Liberia	SN	Senegal
CN	China	LT	Lithuania	SZ	Swaziland
CS	Czechoslovakia	LU	Luxembourg	TD	Chad
CZ	Czech Republic	LV	Latvia	TG	Togo
DE	Germany	MC	Monaco	TJ	Tajikistan
DK	Denmark	MD	Republic of Moldova	TT	Trinidad and Tobago
EE	Estonia	MG	Madagascar	UA	Ukraine
ES	Spain	ML	Mali	UG	Uganda
FI	Finland	MN	Mongolia	US	United States of America
FR	France	MR	Mauritania	UZ	Uzbekistan
GA	Gabon			VN	Viet Nam

INTERNATIONAL SEARCH REPORT

national Application No
PCT/US 96/10929

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 G01N30/88

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 G01N C07K B01D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 94 15951 A (MATTIASSON) 21 July 1994 see page 1, line 29 - page 2, line 7 see page 17, line 11 - page 18, line 15 ---	1,14,21, 26,28, 29,31, 33,37,47
A	US 5 252 216 A (FOLENA-WASSERMANN) 12 October 1993 see column 2, line 50 - column 3, line 24 ---	1,14,21, 26,28, 29,31, 33,37,47
A	EP 0 411 503 A (TECNOGEN) 6 February 1991 see page 9, line 41-53 ---	1,14,21, 26,28, 29,31, 33,37,47
	-/--	

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "&" document member of the same patent family

Date of the actual completion of the international search

22 January 1997

Date of mailing of the international search report

29. 01. 97

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+ 31-70) 340-2040, Tx. 31 651 epo nl,
Fax (+ 31-70) 340-3016

Authorized officer

Zinngrebe, U

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 96/10929

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>US 5 340 474 A (KAUVAR) 23 August 1994</p> <p>see column 1, line 17-27 see column 3, line 57 - column 4, line 51 see column 7, line 1-28 see column 19, line 25 - column 23, line 30</p> <p style="text-align: center;">---</p>	<p>1,14,21, 26,28, 29,31, 33,37,47</p>
A	<p>W0 93 07168 A (PERSEPTIVE BIOSYSTEMS) 15 April 1993</p> <p>see page 35, line 24 - page 38, line 8; figure 3</p> <p style="text-align: center;">-----</p>	<p>1,14,21, 26,28, 29,31, 33,37,47</p>

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 96/10929

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO-A-9415951	21-07-94	AU-A- 5894294	15-08-94
US-A-5252216	12-10-93	AU-A- 3932493	21-10-93
		CA-A- 2132533	30-09-93
		EP-A- 0643608	22-03-95
		FI-A- 944412	23-09-94
		JP-T- 7505469	15-06-95
		NO-A- 943546	23-11-94
		WO-A- 9318835	30-09-93
		ZA-A- 9302015	21-09-94
EP-A-411503	06-02-91	IT-B- 1253882	31-08-95
US-A-5340474	23-08-94	US-A- 5217869	08-06-93
		US-A- 4963263	16-10-90
		US-A- 5133866	28-07-92
		US-A- 5409611	25-04-95
		US-A- 5567317	22-10-96
		AU-B- 628812	24-09-92
		AU-A- 3353789	16-10-89
		EP-A- 0438402	31-07-91
		JP-T- 3505120	07-11-91
		WO-A- 8909088	05-10-89
		US-A- 5384263	24-01-95
		US-A- 5541070	30-07-96
		US-A- 5300425	05-04-94
		AU-B- 654940	01-12-94
		AU-A- 6724990	31-05-91
		CA-A- 2072637	01-05-91
		EP-A- 0500685	02-09-92
		WO-A- 9106356	16-05-91
WO-A-9307168	15-04-93	AU-B- 661349	20-07-95
		AU-A- 2866092	03-05-93
		EP-A- 0610297	17-08-94
		JP-T- 6511084	08-12-94